

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:
RICHARD P. FERRARA
FISH & RICHARDSON P.C.
45 ROCKEFELLER PLAZA
SUITE 2800
NEW YORK, NY 10011

PCT

WRITTEN OPINION

(PCT Rule 66)

RECEIVED
FISH & RICHARDSON, P.C.
NEW YORK CITY OFFICE
JAN 7 2002

Date of Mailing (day/month/year) 12/09/02	
Applicant's or agent's file reference 13837-042W01	REPLY DUE within 2 months/days from the above date of mailing
International application No. PCT/US02/04215	International filing date (day/month/year) 14 February 2002 (14.02.2002)
Priority date (day/month/year) 14 February 2001 (14.02.2001)	
International Patent Classification (IPC) or both national classification and IPC IPC(7): G02B 6/00 and US Cl.: 385/11, 32, 33, 45; 359/618	
Applicant FINISAR CORPORATION	

1. This written opinion is the first (first, etc.) drawn by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:

- | | | |
|------|-------------------------------------|---|
| I | <input checked="" type="checkbox"/> | Basis of the opinion |
| II | <input type="checkbox"/> | Priority |
| III | <input type="checkbox"/> | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| IV | <input type="checkbox"/> | Lack of unity of invention |
| V | <input checked="" type="checkbox"/> | Reasoned statement under Rule 66.2 (a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| VI | <input type="checkbox"/> | Certain documents cited |
| VII | <input type="checkbox"/> | Certain defects in the international application |
| VIII | <input type="checkbox"/> | Certain observations on the international application |

Date: <u>2/9/03</u>
Deadline: <u>2/9/03</u>
Initials: <u>pf</u>
Docketed By Practice Systems
Action Code: <u>Response to written opinion</u>
Base Date: <u>12-09-02</u>
Due Date: <u>02-09-03</u>
Deadline: <u>02-01-03</u>
Initials: <u>fe</u>
Received: _____

3. The applicant is hereby **invited to reply** to this opinion.

When? See the time limit indicated above. ~~The applicant may, before the expiration of that time limit, request this Authority to grant an extension. See rule 66.2(d).~~

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also For an additional opportunity to submit amendments, see Rule 66.4.
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 *bis*.
For an informal communication with the examiner, see Rule 66.6

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.
4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 14 June 2003 (14.06.2003)

Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer Juliana Kang <i>JMecale80</i> Telephone No. (703) 308-3072
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 - V ☒ Reasoned statement under Rule 66.2 (a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
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Name and mailing address of the IPEA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231
Facsimile No. (703)305-3230

Authorized officer

Juliana Kang

Telephone No. (703) 308-3072

WRITTEN OPINION

International application No.

PCT/US02/04215

I. Basis of the opinion

1. With regard to the elements of the international application:*

- ☒ the international application as originally filed
- ☒ the description:
 - pages 1-8, as originally filed
 - pages NONE, filed with the demand
 - pages NONE, filed with the letter of _____.
- ☒ the claims:
 - pages 9-14, as originally filed
 - pages NONE, as amended (together with any statement) under Article 19
 - pages NONE, filed with the demand
 - pages NONE, filed with the letter of _____.
- ☒ the drawings:
 - pages 1-2, as originally filed
 - pages NONE, filed with the demand
 - pages NONE, filed with the letter of _____.
- ☐ the sequence listing part of the description:
 - pages NONE, as originally filed
 - pages NONE, filed with the demand
 - pages NONE, filed with the letter of _____.

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the written opinion was drawn on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

- ☒ the description, pages NONE
- ☒ the claims, Nos. NONE
- ☒ the drawings, sheets/fig NONE

5. ☐ This opinion has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed."

WRITTEN OPINION

International application No.
PCT/US02/04215

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. STATEMENT

Novelty (N)	Claims <u>Please See Continuation Sheet</u>	YES
	Claims <u>Please See Continuation Sheet</u>	NO
Inventive Step (IS)	Claims <u>Please See Continuation Sheet</u>	YES
	Claims <u>Please See Continuation Sheet</u>	NO
Industrial Applicability (IA)	Claims <u>Please See Continuation Sheet</u>	YES
	Claims <u>Please See Continuation Sheet</u>	NO

2. CITATIONS AND EXPLANATIONS

Please See Continuation Sheet

WRITTEN OPINION

International application No.
PCT/US02/04215

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

TIME LIMIT:

The time limit set for response to a Written Opinion may not be extended. 37 CFR 1.484(d). Any response received after the expiration of the time limit set in the Written Opinion will not be considered in preparing the International Preliminary Examination Report.

V.1. Reasoned Statements:

The opinion as to Novelty was positive (Yes) with respect to claims 3-5, 7-21, 24-30, 32, 34, 36, 38-42, 44-47, 49-53, 55-58, 60-62

The opinion as to Novelty was negative (No) with respect to claims 1, 2, 6, 22, 23, 31, 33, 35, 37, 43, 48, 54, 59

The opinion as to Inventive Step was positive (Yes) with respect to claims NONE

The opinion as to Inventive Step was negative (NO) with respect to claims 1-62

The opinion as to Industrial Applicability was positive (YES) with respect to claims 1-62

The opinion as to Industrial Applicability was negative (NO) with respect to claims NONE

V. 2. Citations and Explanations:

Claims 1, 2, 6, 22, 23, 31, 33, 35, 37, 43, 48, 54 and 59 lack novelty under PCT Article 33(2) as being anticipated by Cheng et al (U.S. Patent 5,657,155).

Regarding claims 1, 31, 33, 37, 43, 48, 54, and 59, Cheng et al disclose an optical splitter device comprising; a first fiber coupling ((12a) optically coupled to a fiber (14a), a beam splitter (25) optically coupled to the first fiber coupling, an isolator (24b) optically coupled to the beam splitter; and a second fiber coupling (12b) optically coupled to the isolator and optically coupled to a first additional fiber (14b) and second additional fiber (14c).

Regarding claims 2 and 6, Cheng et al's first fiber coupling is a GRIN lens, which collimates the beam of light propagating from the fiber (14a).

Regarding claims 22 and 23, Cheng et al's second fiber coupling is a focusing lens (see column 5 line 22).

Regarding claim 35, Cheng et al disclose the optical device used in an amplifier (see Fig. 7 and column 5 lines 40-50).

Claims 1-22 and 24-62 lack an inventive step under PCT Article 33(3) as being obvious over Pan (U.S. Patent 5,740,288) in view of Pan (U.S. Patent 5,208,876).

Regarding claims 1-7, 22, 24, 28-33, 37-43, 48-54, 59, and 61, Pan '288 disclose an optical device comprising a first fiber coupling (11) optically coupled to a fiber (10), a beam splitter/combiner (24) optically coupled to the first fiber coupling, and a second fiber coupling (13, 15) optically coupled to a first additional fiber (12) and a second additional fiber (14). However, Pan '288 does not teach an isolator. Pan '288 states that the fiber coupling is GRIN lens/optical fiber subassemblies, which are found in U.S. Patent 5,208,876 by the same inventor, Pan. Pan '876 discloses an optical isolator including optical fibers, which are slant polished and coated with AR (see column 4 lines 41-51). It would have been obvious to one with ordinary skill in the art at the time the invention was made to use Pan '876 GRIN lens/optical subassemblies, which includes an isolator, in Pan '288, since Pan '288 explicitly suggests to use the Pan '876 GRIN lens/optical subassemblies. Pan '288 teaches that the device can be either a beam splitter or a beam combiner. Thus, it would not involve an inventive step to recognize switching the isolator in Pan '288/'876 depending on the direction of the beam in order to use the device as either a beam splitter or a beam combiner.

Regarding claims 8-10, 55, 60 and 62, Pan '288 discloses the polarization beam splitter cube formed by two right-angle prisms (see column 3 lines 57-62).

Regarding claims 11 and 12, the first additional fiber (12) receives S-component beam and the second additional fiber (14)

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

receives the P-component beam (see Fig. 1).

Regarding claims 13, 19 and 20, Pan '876 discloses a Faraday rotator (13) (see column 2 lines 18-20).

Regarding claim 21, Pan '876 discloses about 30dB optical isolation (see column 5 line 66).

Regarding claims 14-18, 44-47, and 56-58, Pan '876 slanted fiber with AR coating inherently inhibits optical feedback.

Regarding claims 25 and 26, it would not involve an inventive step with ordinary skill in the art use either a single or multi-mode fibers.

Regarding claim 27, Pan '288 discloses using PM fibers (see column 4 lines 35-36).

Regarding claims 34-36, as described above, Pan '288/'876 teach the optical beam splitter/combiner. However, Pan '288/'876 does not teach that the device is coupled to a laser or used in an amplifier. It would not involve an inventive step for one with ordinary skill in the art to recognize a source of light such as a laser that is coupled to the beam splitter/combiner. Since Pan '288/'876 is used in an optical network (see column 1 line 13-23), which requires amplification of a signal, it would not involve an inventive step to use the Pan '288/'876 device in an amplifier.

Claims 34, 36 lack an inventive step under PCT Article 33(3) as being obvious over Cheng et al.

As described above, Cheng et al disclose the optical beam splitter. However, Cheng et al do not teach a laser that is coupled to the beam splitter. It would not involve an inventive step for one with ordinary skill in the art to recognize a source of light such as a laser that is coupled to the beam splitter. Also, it would not involve an inventive step to use the Cheng et al's beam splitter in an optical network, which requires beam splitting, combining and routing.

NEW CITATIONS

US 5,208,876 A (PAN) 04 May 1993, see abstract, see column 4 lines 11-51.